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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,812	11/18/2003	Hyeong-Gon Noh	50808/P849	8038

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CHRISTIE, PARKER & HALE, LLP  
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EXAMINER
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DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/716,812

Applicant(s)

NOH, HYEONG-GON

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-23 and 25-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-15 and 27-29 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12, 16-23, 25, 26 and 30-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This Office Action is in response to the communication filed on 2/5/07. Applicant's arguments have been considered, but are moot in view of the new grounds of rejection. Claims 1-9, 11-23 and 25-32 are pending. This Action is made FINAL, as necessitated by amendment.

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 7, 11, 12, 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites "an ester-based organic solvent", which lacks proper antecedent basis. Examiner suggests "wherein the ester-based organic solvent is selected ...".

Claim 7 should recite "wherein the aromatic hydrocarbon organic solvent is represented by..." to provide proper antecedent basis.

Claim 11 recites "each of the at least two carbonates is independently selected from cyclic and linear carbonates", which is indefinite. Claim 1 recites "a compound having at least two carbonate groups", which are  $-\text{OCO}_2-$  groups. Therefore, while the additive compound may be cyclic or linear the "carbonate groups" cannot be considered linear or cyclic. See claim 25.

Claim 11 recites improper Markush group language. Examiner suggests "selected from the group consisting of". See also claim 25.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 6, 8, 9, 11, 12, 23, 25, 26 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ventura et al., US 6,015,638.

Ventura teaches a polymer electrolyte comprising a plasticizer (additive) and a solvent. The plasticizer may comprises at least two carbonate groups and an alkenyl group (carbon-carbon double bond). The carbonate groups may be separated from one another by at least two carbons (claims 1-3 and 18). The electrolyte may comprise a lithium salt such as LiPF<sub>6</sub> or LiAsF<sub>6</sub> and the solvent may be propylene carbonate, dimethyl carbonate diethoxyethane, methoxyethoxy ethyl ether or mixtures thereof. Table II shows a specific solvent combination of EC:MEE (ethylene carbonate:methoxyethoxy ethyl ether) in a 1:1 ratio (50 vol% of ether-based solvent). Table II shows a specific salt concentration of 1.0 M. The electrolyte/plasticizer may be used for a battery electrolyte (6:21-26).

Thus the claims are anticipated.

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Claims 1-9, 11-12, 16-23, 25, 26 and 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al., US 6,949,317.

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Yoshida teaches a polymer gel electrolyte including an electrolyte solution including a compound with at least two carbonate structures and an electrolyte salt. The electrolyte may be used for a lithium secondary battery (abstract). Example 2 teaches an electrolyte solution comprising 1.43 M  $\text{LiPF}_6$  dissolved in a 1:1 mixture of  $\text{C}_2\text{H}_5\text{-OCO}_2\text{-C}_2\text{H}_4\text{-OCO}_2\text{-C}_2\text{H}_5$  and diethyl carbonate (col. 37). Yoshida teaches a reactive double bond-bearing compound (component d) such as diacrylate compounds or sulfone compounds can be used. Triethylene glycol diacrylate is specifically disclosed (22:50-67). The solvent may include a lactone such as  $\gamma$ -butyrolactone, an acyclic carboxylate such as methyl acetate, a carbonate such as DMC, DEC, MEC, EC or PC or combinations of the disclosed solvents (9:1-31). Component d is typically in an amount of at least 1 wt%, preferably 5-40 wt% (24:25-29). Other reactive double bond-containing compounds, such as vinylene carbonate, may be added to the electrolyte (23:13-23). The battery comprises a positive electrode, a negative electrode and the electrolyte. The positive electrode includes a positive active material capable of absorbing and releasing lithium ions, such as lithium nickel oxide. The negative electrode includes a negative active material such as lithium, lithium alloys or carbonaceous materials that absorb and release lithium ions (27:24-29:28). A separator is between the positive and negative electrodes (29:61-62).

Thus the claims are anticipated. Note diethyl carbonate is an ester based organic solvent that comprises 50 vol% of the total solvent.

***Allowable Subject Matter***

Claims 13-15 and 27-29 are allowed.

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The following is an examiner's statement of reasons for allowance: the claims are directed toward an electrolyte comprising the claimed additive compound. The prior art does not teach or suggest the additive of claims 13-15 and 27-29.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 25, 2007



**TRACY DOVE**  
**PRIMARY EXAMINER**